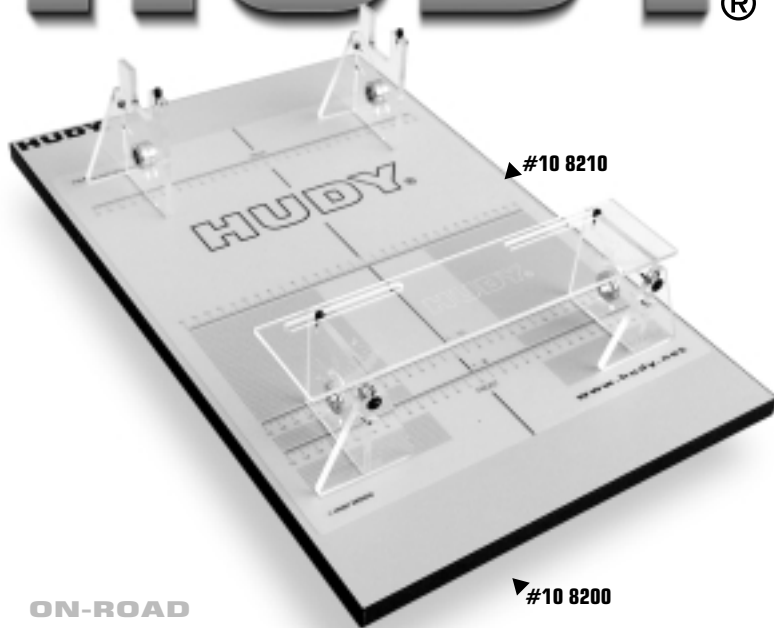


# HUDY®

## HUDY SET-UP SYSTEMS



ON-ROAD

OFF-ROAD

TOURING

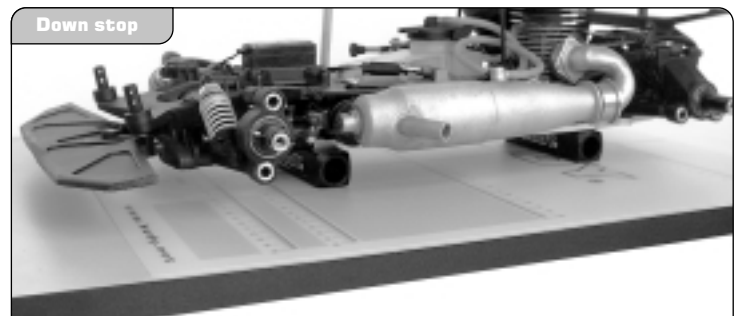
Car setup is a difficult and controversial step in getting your car to its maximum performance. Even if you have extensive knowledge of your car and know all the theories on handling dynamics, this knowledge is still tedious to use in practice because of the inherent complexity in the setup process itself. HUDY solves this problem by bringing you the **HUDY Set-Up**, a deceptively simple, but powerful tool. Just bolt it on to the wheels, and you now get instant, accurate, and reproducible readings. No more imprecise eyeballing, no more inaccurate guessing, just consistent and precise settings like the world's top drivers use. We are confident that you will soon grow fond of this tool. In the meantime, feel free to email HUDY technical support at [team@hudy.net](mailto:team@hudy.net)

Congratulations on picking the **HUDY Set-Up** system as your choice for improving your R/C car's performance. With this advanced tool, unbalanced, askew, inaccurate suspension geometry, as well as not being able to duplicate a "hot" setup from a fast driver or that you picked up on the Internet, are things of the past.

This product is now your best ally when it comes to getting the most performance out of your competition vehicle, and the purpose of this manual is to help you use it as efficiently as possible. Because we want our customers to enjoy their RC cars in general, and to turn faster lap times at the racetrack in particular, we would like to thank you once again for choosing this product and trusting HUDY Products

You are an R/C car racer who is confident in his driving skills. But somehow you just cannot seem to be able to make it to the podium after the final buzzer has sounded. Although your driving style is fast and efficient, your car sometimes does not react exactly the way you would like it to. After each run, you bring the car back to the pits, and by eyeballing it or using cheap tools, check its suspension geometry, ride height, and everything you can think of, but the car keeps acting differently from the fast guys'. Does this sound familiar? Well, we at HUDY have a solution for you... it's called the **HUDY Set-Up**, and it will help you get to the top of the A-main.

**All photos and diagrams in this manual depict the use of a HUDY Set-Up 10 8000 with a 1/8-scale Serpent Vector . Other Set-Up models may have different mounting hardware, but the Set-Up will function the same way.**



### Down-stops front:

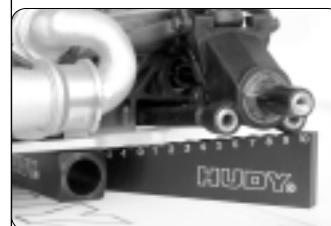
With the steering centered, measure the distance from the surface to the bottom part of the steering block.

The thickness of the block used to elevate the chassis is subtracted from this measurement.



Adjust the down-stops.

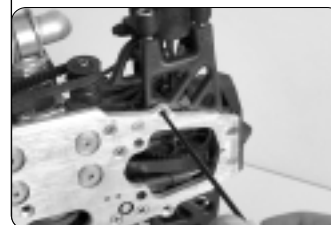
If possible, adjust the front up-stop.



### Down-stops rear:

Measure the distance from the surface to the bottom part of the up right.

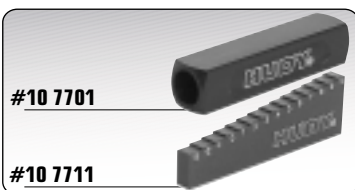
The thickness of the block used to elevate the chassis is subtracted from this measurement.



Adjust the down-stops.

If possible, adjust the rear up-stop. The rear up-stops limit the upward movement of the rear suspension. Adjust the up-stop so that the chassis just touches the ground under full compression.

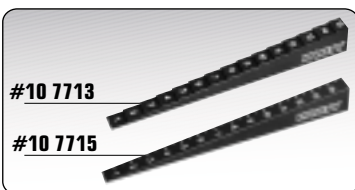
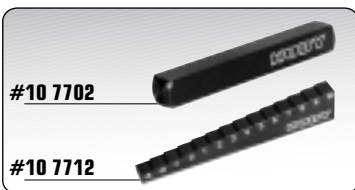
**Now your car is ready to be placed on the HUDY set-up.**



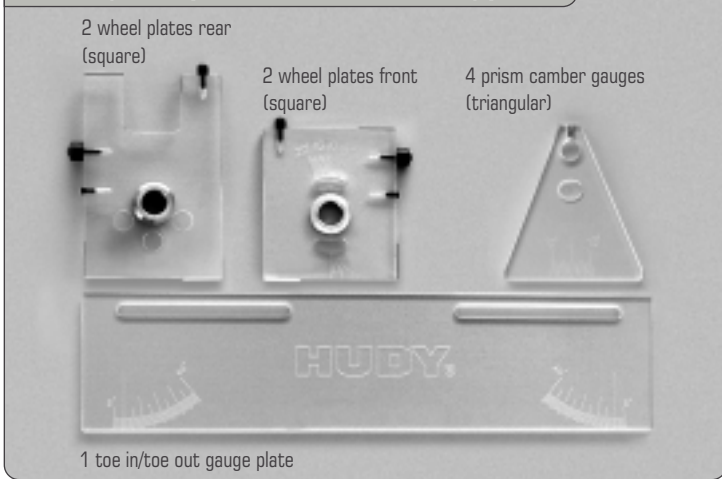
For ultimate accuracy, we recommend using the **HUDY SET-UP BOARD**, part #108200, which provides an exceptionally flat and warp-resistant surface on which the prism gauges will slide freely. The smooth, low-friction surface will give you the most consistent readings possible.

To get the most accurate measurements, before placing your car on the Set-Up system, we recommend that you adjust the suspension down-travel and chassis ride height. For these adjustments use the **#10 7701 HUDY CHASSIS DROOP GAUGE SUPPORT BLOCKS (20 mm)** and **#10 7711 CHASSIS DROOP GAUGE -3 mm TO 10 mm** for 1/8 and 1/10 on-road nitro cars. For 1/10 electric and nitro cars, we recommend using the **#10 7702 HUDY CHASSIS DROOP GAUGE SUPPORT BLOCKS (10 mm)** and **#10 7712 CHASSIS DROOP GAUGE -3 TO 10 mm**.

The HUDY Ride Height Gauge part number #10 7713 or #107714 accurately checks the ride height.



**The Hudy Set-Up consists of the following parts:**



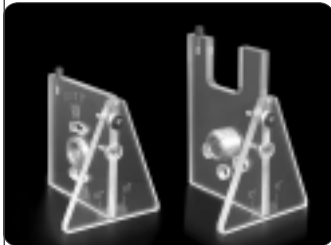
2 wheel plates rear (square)

2 wheel plates front (square)

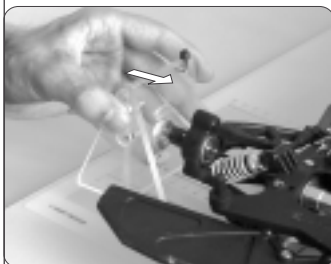
4 prism camber gauges (triangular)

1 toe in/toe out gauge plate

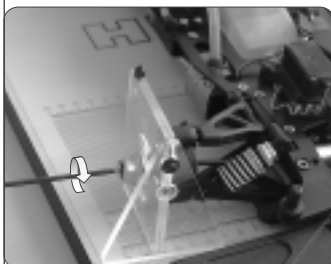
**Assembly and installation**



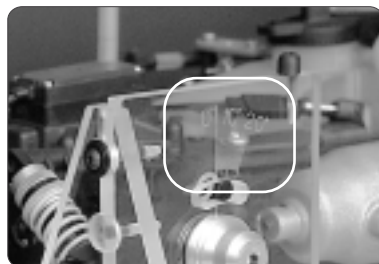
Attach a prism gauge to each plate using the main round hole in each prism. Push the prisms flush on their respective plates so they have as much contact as possible. Tighten the screw in the top of the triangle. The rear prism gauges will be attached to the rearward section of the rear wheel plates, and the front prism gauges to the forward edge of the front wheel plates.



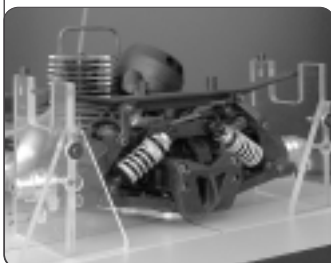
Remove the wheels from your car, and open front the one-way if available. Now, in place of the car wheels, mount each of the four wheel plates. If your axles use quick-release levers, please use a file or emery board to round the edges of the levers. This will make installation of the Set-Up stands easier and prevent damage to them.



Secure the plates with a wheel nut or quick release lever. In the front, the prism gauges will be attached to the front edge of the wheel plates, and in the rear, they will be attached to rear plate. Be sure to orient the wheel plates accordingly.

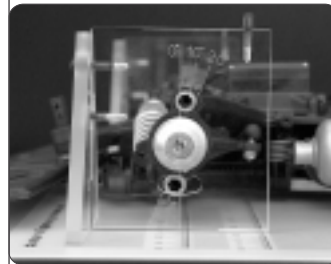


The front plates need to be oriented so the caster scale markings can be read from the side. Once the wheel nuts are tightened, make sure that the wheel plate's bottom edge lies flat on your setup surface.



Finally, you can position the toe-in/toe-out plate on either the front or rear end. Insert the screw heads on the top edge of the wheel plates into the corresponding slots on the toe-in/toe-out gauge plate. On most cars, the body mounts should go through the large cut-out in the plate, but if they don't fit, remove the mounts before using the Set-Up.

**Performing Adjustments**

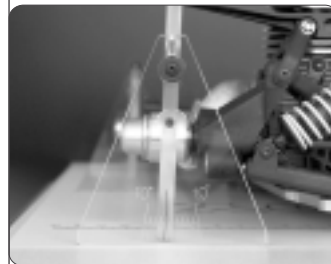


**Caster:** Caster is one of the most important adjustments on a racecar. It will greatly affect the way the car steers during on- and off-power transitions. Caster is extremely critical to the way the car feels and for proper symmetry. The caster angle is the angle of the imaginary line between the top and bottom pivot balls of the steering block (on a pivot ball front end) or the angle of the steering kingpin (on a simpler kingpin-style suspension).

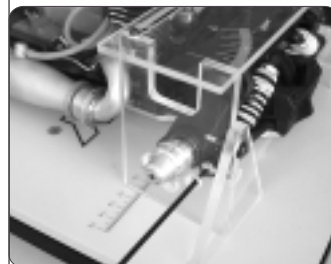


Caster angle is commonly adjusted with nylon spacers that are inserted either in front or behind the upper front suspension arm. More spacers in front will increase the caster angle, while more spacers behind will decrease the caster angle. On a carrier or kingpin-style steering system, caster is typically adjusted by changing the spindle carrier. To remove the nylon spacers use EXHAUST SPRING / CASTER CLIP REMOVER TOOL, part#10 7610.

The Hudy Set-Up allows you to adjust caster with unmatched ease. Just position the front wheel plates on the front axles and read the angle on the gauges between the imaginary line that goes from the top articulation point of the spindle/C-hub to the bottom one, and the vertical line on the plate.



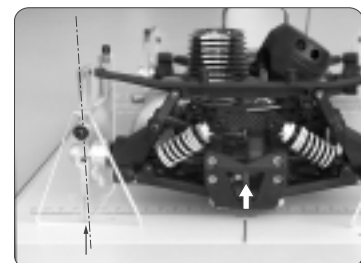
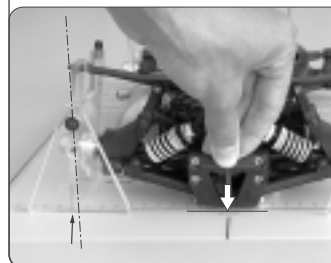
**Camber:** The graduation marks on the gauges should be easily viewable; you will notice that the black line on the edge of each plate indicates the camber angle, in degrees, on each prism gauge.



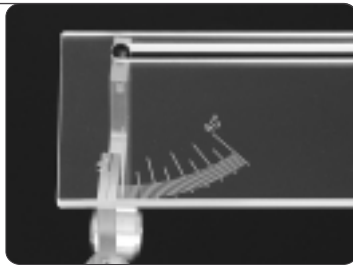
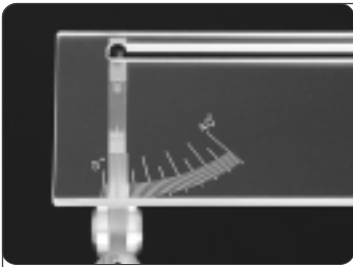
Now you need to adjust the camber on each wheel. Depending on your car's design, you can either lengthen or shorten the upper A-arm/camber link or lower A-arm for cars that use ball-mounted hubs. Slide the proper wrench through the machined opening in the wheel plate in order to reach the ball. Having a longer upper link induces negative camber, while a shorter one causes positive camber. Note that if you adjust the lower pivot ball, you will also be changing the track, or width of the car. Be sure that the left and right wheels are the same distance from the car's center line.

Except for certain special race conditions (i.e. oval), it is recommended that suspension geometry is adjusted symmetrically from left to right. Although camber is discussed more in-depth further on, a good starting point is usually between 0.5 and 1 degree of negative camber on each wheel.

**Camber intake:** Also referred to as "camber rise", this measurement quantifies how much the camber changes on the car when the suspension is compressed. Usually, a shorter upper link will result in a large camber intake, while equal length upper and lower links (or A-arms) help keep the camber intake minimal. To measure camber intake, set the car at normal ride height and then measure the camber on the prism gauges. Next, push on the suspension, and measure the camber again. The difference between those two angles represents the camber rise. It can usually be adjusted by changing the upper link/arm mount location on the shock tower. Note that not all cars offer this adjustment.







### Toe-in/toe-out:

We recommend that you first adjust the rear toe-in/toe-out, if your car allows it, then put the car on the track and adjust the steering trim so that the car tracks straight. Then you can proceed to the front toe-in/toe-out adjustment back in the pits.

When the left and right wheels are pointed inward towards the front of the car, this is referred to as "toe-in". Otherwise, it has "toe-out". Note that on most cars, only the front wheels can be adjusted for toe-in, but more and more racecars now have rear adjustable toe settings. Rear toe-in is a primary adjustment, and will dictate the symmetry of the handling of the car. It is critical that you adjust it **perfectly symmetrical** from left to right.



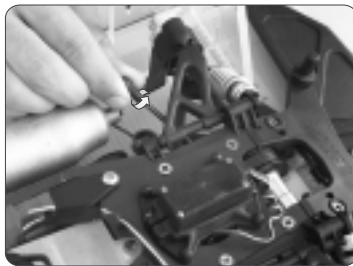
### Rear toe-in/toe-out adjustment (when applies):

Position the toe-in/toe-out gauge plate on the rear wheel plates as described above. To read the how much toe-in/toe-out the rear left wheel has, push the plate to the right until the screw on the top edge of the wheel plate hits the edge of the aperture in the toe-in/toe-out gauge plate. Now read the toe-in/toe-out using the black mark on the wheel plate and the graduation marks on the toe-in/toe-out gauge plate. Repeat this for the right wheel.

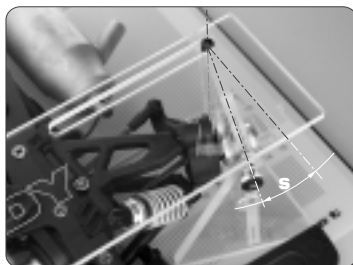
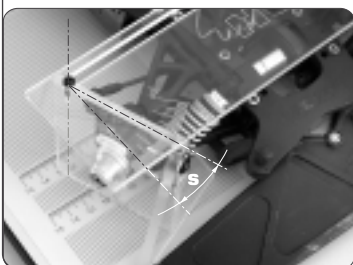


### Front toe-in/toe-out adjustment:

Once the steering trim has been set up, adjust the front toe-in/toe-out the same way as you adjusted the rear toe-in/toe-out, by lengthening or shortening the steering links.



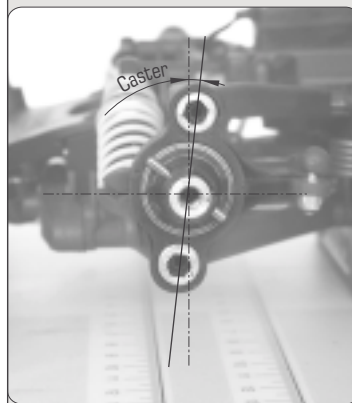
**Steering throw adjustment:** Although most cars' front suspension geometry is designed such that the turning radius of the car is the same from left to right, sometimes this isn't the case. You can use the toe-in/toe-out gauge plate to make sure that the steering turns as sharply to the left as it does to the right. If it is not the case and if your radio has EPA (End Point Adjustments), adjust the EPA on your transmitter in order to achieve symmetry. The wheels should turn equally in both directions for balanced handling.



**Ride height:** The HUDY Ride Height Gauge part number #10 7713 or #107715 accurately checks the ride height front and rear, left and right. It is versatile enough to be used on all types of cars.

### Set-up tips

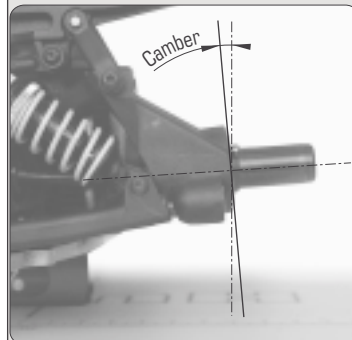
Here is a summary of how the most important setup changes usually affect a typical car's behavior. However, these are only rules of thumb and should only be considered as such. There is no better tuning guide than the knowledge you acquire yourself at the track by performing your own experiments. During the learning phase, remember to always do one change at a time. Try to document the changes you made and how they affect the car by logging your experiments as thoroughly as possible. Each car has its own characteristics, and the effects of the same setup change may be different from car to car. We are confident that our Set-Up system will help you get that knowledge faster.



### Caster:

As mentioned earlier, caster is a critical adjustment to the handling of your car. It definitely needs to be symmetrical, as well as carefully controlled. Because it is such an important adjustment, only a few car manufacturers allow the racer to modify it, other than by fitting different steering parts to the car. To the racer who understands how caster works, though, it can be of great use. Of course, different suspension designs react differently to caster changes. The caster angle affects the on- and off-power steering, as it will tilt the chassis more or less depending on how much caster is applied.

**Here are the rules of caster:** More caster will cause the car to have less on-power steering and more off-power steering, and will increase initial steering into the corner, but makes the car more difficult to drive. Less caster makes the car more nimble on-power and more stable off-power, as well as making the car less sensitive to steering movements, though straight line stability is decreased. Also it should be noted that a second-order consequence is that more caster allows the front suspension of the car to soak-up bumps slightly better. HUDY recommends that you use less caster on smooth, high-grip tracks, and more caster on slippery, inconsistent, and rough surfaces.



### Camber:

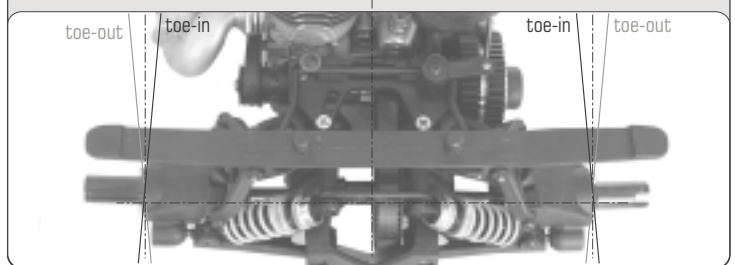
Usually, the end of the car with more negative camber will have more grip, up to a point where the opposite end of the car loses traction in the corners and is hard to recover on the track. Less negative camber provides a more progressive slide but gives less grip overall. Positive camber is never used because the car tends to handle erratically with it. HUDY recommends that you start with half a degree to a degree of negative camber on each wheel, and adjust it on a regular basis to maximize tire wear, i.e. having a flat wear band.

### Camber intake:

It is extremely hard to make a general statement about camber intake. The only valid comment that can be made is that the less camber intake there is, i.e. the camber change is minimal under compression, the more consistent and "square" the car will be, especially through any rough sections.

### Toe in/out:

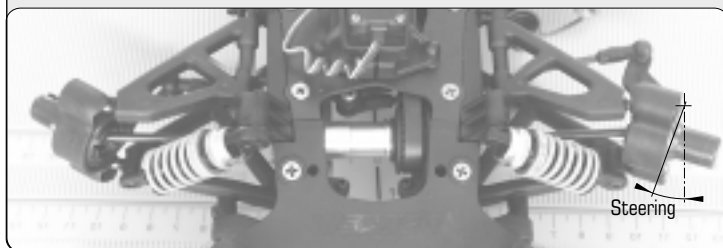
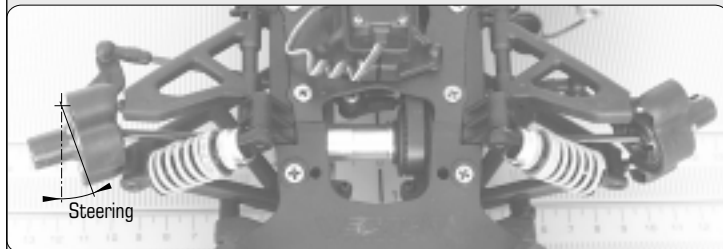
Rear: The more rear toe-in a car has, the more stable it will be under acceleration and deceleration transitions. However, this increase in stability comes at the expense of steering



response, and a marginal decrease in top speed. Rear toe-out is not recommended. Front: With front toe-in, most cars will have less steering, and will actually steer in the turn a lot smoother. Front toe-out results in a more aggressive steering when entering the turn. However it can also cause the car to wander slightly in high-speed straight-aways.

#### Steering throw:

The amount of front steering travel your car has can actually be misleading. Most people think that the further the wheels travel, the more responsive the steering will be. This can sometimes be false, especially with some on-road cars with a lot of built-in steering. If the wheels travel too far, the front wheels can start sliding in the turn instead of hooking up, which leads to a strong push and abnormal tire wear. Turning the dual rate down on your radio can lead to surprising results, i.e. more steering.



#### Maintenance

Although the HUDY Set-Up system doesn't require any specific maintenance, it is recommended that you clean its components every now and then. Use a soft detergent, for instance soap or liquid dishwasher soap.

**DO NOT USE ANY ALCOHOL, ACETONE OR ANY OTHER SPIRIT-BASED CHEMICAL,** since it will damage the plastic your Set-Up is made of. But keeping your Set-Up clean will definitely make it easier, more efficient, and more pleasurable to use.

#### Conclusion

HUDY is confident that our tool will help you and your racing machine turn faster and more consistent lap times at the racetrack. Allow us to sum up a few basic rules for you, in order to get the most of your car:

Regularly (i.e. after each run if you have enough time) check for some obvious setup problems on your car, asymmetry, positive camber or similar issues. Modern, very adjustable suspensions can change considerably after taking a hard hit.

Only change one thing at a time, in order to get a better understanding of what consequence each change has on the handling of your car.

A car that "feels" faster is not necessarily turning faster lap times. The stopwatch is the only judge.

Remember to document all the changes you make, and the effects they have on your car and lap times.

Do not hesitate to ask for some setup tips from the local fast drivers. Although it is better to refine your setup knowledge by performing and understanding your own adjustments that fit your own driving style, setup tips borrowed from other fast drivers usually are a good place to start.

Remember to enjoy your hobby, and to recommend HUDY products to your racing partners!

#### Best of luck at the racetrack.

We hope you will be satisfied with the performance and quality of this equipment. If you have any questions or advice about how to further improve this tool, please do not hesitate to contact us.

**Thank you for choosing HUDY products!**

#### HUDY SET-UP SYSTEMS Buyer's Guide

- 108000** ON-ROAD 1/8 : SERPENT, SMP, HPI, KYOSHO, NEO, (FOR WHEELAXLE 12 mm)
- 108100** ON-ROAD 1/10: SERPENT, PICCO, MUGEN, NEO, (FOR WHEELAXLE 10 mm)
- 108300** ON-ROAD 1/8: PICCO (FOR WHEELAXLE 12 mm)
- 108400** ON-ROAD 1/8: MUGEN (FOR WHEELAXLE 12 mm)
- 108500** OFF-ROAD 1/8: KYOSHO MP5 - MP6, (FOR WHEELAXLE 8 mm)
- 108600** OFF-ROAD 1/8: CRONO, LARO, FLASH, THUNDER TIGER, OFNA, KYOSHO MP7.5, (FOR WHEELAXLE 12 mm)
- 108700** RALLY GAME 1/8: BMT 981, (FOR WHEELAXLE 12 mm)
- 108800** OFF-ROAD 1/8: ALL OFF ROAD CARS (EXCEPT KYOSHO MP5-MP6) MUGEN, KYOSHO MP 7.5, CRONO, LARO, FLASH, THUNDER TIGER, OFNA, (FOR WHEELAXLE 12 mm)  
**Fits 1/8 off-road cars that feature pivot-ball suspensions.**
- 109000** TOURING CAR 1/10: SERPENT IMPULSE, CORALLY,  
**Fits 1/10 touring cars that feature rear body mounts above the axles.**
- 109200** TOURING CAR 1/10: SERPENT IMPULSE, HPI, YOKOMO, ASSOCIATED TC3, SCHUMACHER, NEO, KAWADA, LOSI, MUGEN MTX2, YOKOMO, GM ABT A4, OFNA DB4,  
**Fits 1/10 touring cars that feature rear body mounts behind the axles.**
- 109300** TOURING CAR 1/10: ALL TOURING CARS,  
**Universal Set-Up for 1/10 touring cars. Contains two toe gauge plates. This system can accommodate cars with rear body mounts in any position.**
- 109500** ON-ROAD 1/5: FG INCLUDING ALLU NUTS (4).

**108200** FLAT SET-UP BOARD 340 mm x 540 mm

**108210** SET-UP BOARD DECAL

**107610** EXHAUST SPRING / CASTER CLIP REMOVER TOOL

**107701** HUDY CHASSIS DROOP GAUGE SUPPORT BLOCKS (20 mm) FOR 1/8 CARS

**107702** HUDY CHASSIS DROOP GAUGE SUPPORT BLOCKS (10 mm) FOR 1/10 CARS

**107711** HUDY CHASSIS DROOP GAUGE -3 mm TO 10 mm FOR 1/8 CARS (20 mm)

**107712** HUDY CHASSIS DROOP GAUGE -3 mm TO 10 mm FOR 1/10 CARS (10 mm)

**107713** HUDY RIDE HEIGHT GAUGE 0 mm TO 15 mm - STEPPED

**107715** HUDY RIDE HEIGHT GAUGE 0 mm TO 15 mm

#### #10 9040

▼ TOE IN / TOE OUT GAUGE PLATE FOR SET-UP FIXTURE #10 9000, #10 9300



#### #10 9340

▼ TOE IN / TOE OUT GAUGE PLATE FOR SET-UP FIXTURE #10 9200, #10 9300



[www.hudy.net](http://www.hudy.net)